

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2004/000576

## A. CLASSIFICATION OF SUBJECT MATTER

**IPC7 B01D 29/66, B01D 35/30**

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7 B01D, C02F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
Korean Patents and applications for inventions since 1975,  
Korean Utility models and applications for utility models since 1975,  
Japanese Utility models and applications for utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
eKIPASS, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 2003-94150 A (NANOENTECH CO., LTD.) 11 DECEMBER 2003 See abstract and claims	1-12
A	WO 00/63122 A1 (ASAHI KASEI CO., LTD.) 26 OCTOBER 2000 See the whole document	1
A	JP 7-178320 A (MITSUBISHI RAYON CO., LTD.) 18 JULY 1995 See abstract and figure 1	1
A	WO 02/11867 A1 (TORAY INDUSTRIES, INC.) 14 FEBRUARY 2002 See figure 1, 2	1
A	JP 9-262443 A (SANKI ENG CO., LTD.) 7 OCTOBER 1997 See abstract and figures	1

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

17 DECEMBER 2004 (17.12.2004)

Date of mailing of the international search report

**21 DECEMBER 2004 (21.12.2004)**

Name and mailing address of the ISA/KR



Korean Intellectual Property Office  
920 Dunsan-dong, Seo-gu, Daejeon 302-701,  
Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

BYUN, Sang Hyun

Telephone No. 82-42-481-5566



**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

PCT/KR2004/000576

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR 2003-94150 A	11.12.2003.	KR 425907 B1	01.04.2004.
WO 00/63122 A1	26.10.2000.	EP 1088792 A1	04.04.2001.
		US 6322703 BA	27.11.2001.
		US 6495041 BB	17.12.2002.
		AU 742973 B2	17.01.2002.
		CA 2332845 AA	26.10.2000.
JP 7-178320 A	18.07.1995.	None	
WO 02/11867 A1	14.02.2002.	JP 2002-113333 A2	16.04.2002.
		AU 200175787 A5	18.02.2002.
		CA 2385946 AA	14.02.2002.
		TW 505539 B	11.10.2002.
		EP 1350555 A1	08.10.2003.
		CN 1392802 T.	22.01.2003.
		US 2003038075 AA	27.02.2003.
JP 9-262443 A	07.10.1997.	None	

From the INTERNATIONAL BUREAU

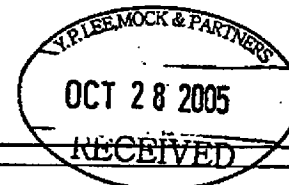
**PCT**

FIRST NOTICE INFORMING THE APPLICANT OF  
THE COMMUNICATION OF THE INTERNATIONAL  
APPLICATION (TO DESIGNATED OFFICES WHICH  
DO NOT APPLY THE 30 MONTH TIME LIMIT  
UNDER ARTICLE 22(1))

(PCT Rule 47.1(c))

To:

Y.P. LEE, MOCK & PARTNERS  
The Cheonghwa Bldg.  
1571-18 Seocho-dong  
Seocho-gu  
Seoul 137-874  
RÉPUBLIQUE DE CORÉE



Date of mailing (day/month/year)  
13 October 2005 (13.10.2005)

Applicant's or agent's file reference  
NA-21657-PCT

**IMPORTANT NOTICE**

International application No.  
PCT/KR2004/000576

International filing date (day/month/year)  
17 March 2004 (17.03.2004)

Priority date (day/month/year)  
08 March 2004 (08.03.2004)

Applicant

NANOENTECH CO. LTD. et al

1. **ATTENTION:** For any designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002 (30 months from the priority date), **does apply**, please see Form PCT/IB/308(Second and Supplementary Notice) (to be issued promptly after the expiration of 28 months from the priority date).

2. Notice is hereby given that the following designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002, **does not apply**, has/have requested that the communication of the international application, as provided for in Article 20, be effected under Rule 93bis.1. The International Bureau has effected that communication on the date indicated below:  
15 September 2005 (15.09.2005)

CH

In accordance with Rule 47.1(c-bis)(i), those Offices will accept the present notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

3. The following designated Offices, for which the time limit under Article 22(1), as in force from 1 April 2002, **does not apply**, have not requested, as at the time of mailing of the present notice, that the communication of the international application be effected under Rule 93bis.1:

LU, SE, TZ, UG, ZM

In accordance with Rule 47.1(c-bis)(ii), those Offices accept the present notice as conclusive evidence that the Contracting State for which that Office acts as a designated Office does not require the furnishing, under Article 22, by the applicant of a copy of the international application.

**4. TIME LIMITS for entry into the national phase**

For the designated Office(s) listed above, and unless a demand for international preliminary examination has been filed before the expiration of **19 months** from the priority date (see Article 39(1)), the applicable time limit for entering the national phase will, **subject to what is said in the following paragraph**, be **20 MONTHS** from the priority date.

In practice, time limits other than the 20-month time limit will continue to apply, for various periods of time, in respect of certain of the designated Offices listed above. For regular updates on the applicable time limits (20 or 21 months, or other time limit), Office by Office, refer to the *PCT Gazette*, the *PCT Newsletter* and the *PCT Applicant's Guide*, Volume II, National Chapters, all available from WIPO's Internet site, at <http://www.wipo.int/pct/en/index.html>.

It is the applicant's sole responsibility to monitor all these time limits.

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Authorized officer

Philippe Becamel

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## PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING

PCT

**NOTIFICATION OF TRANSMITTAL OF  
INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)

(PCT Rule 71.1)

To:

LEE, Young-Pil

The Cheonghwa Bldg. 1571-18 Seocho-dong, Seocho-gu  
Seoul 137-874, Republic of Korea

Date of mailing  
(day/month/year) 19 APRIL 2006 (19.04.2006)

Applicant's or agent's file reference  
NA-21657-PCT

## IMPORTANT NOTIFICATION

International application No.

PCT/KR2004/000576

International filing date (day/month/year)

17 MARCH 2004 (17.03.2004)

Priority date (day/months/year)

08 MARCH 2004 (08.03.2004)

Applicant

NANOENTECH CO., LTD. et al

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits here with the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. REMINDER

The applicant must enter the national phase before each elected office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the *PCT Applicant's Guide*.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed invention is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the IPEA/KR



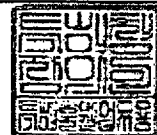
Korean Intellectual Property Office  
920 Dunsan-dong, Seo-gu, Daejeon 302-701,  
Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

COMMISSIONER

Telephone No. 82-42-481-5208



## PATENT COOPERATION TREATY

## PCT



## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference NA-21657-PCT	<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. <b>PCT/KR2004/000576</b>	International filing date(day/month/year) <b>17 MARCH 2004 (17.03.2004)</b>	Priority date (day/month/year) 08 MARCH 2004 (08.03.2004)	
International Patent Classification (IPC) or national classification and IPC  <b>B01D 29/66(2006.01)i, B01D 35/30(2006.01)i</b>			
Applicant  <b>NANOENTECH CO., LTD. et al</b>			

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
- a. ☐ (sent to the applicant and to the International Bureau) a total of \_\_\_\_\_ sheets, as follows:
- ☐ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
- ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
- b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_ containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items:
- ☐ Box No. I Basis of the report
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand  <b>20 APRIL 2004 (20.04.2004)</b>	Date of completion of this report  18 APRIL 2006 (18.04.2006)
Name and mailing address of the IPEA/KR  Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No.	Authorized officer  LEE, HYUN SONG  Telephone No. 

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/KR2004/000576

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☒ This report is based on translations from the original language into the following language English which is the language of a translation furnished for the purposes of:
    - ☐ international search (under Rules 12.3 and 23.1(b))
    - ☒ publication of the international application (under Rule 12.4)
    - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
  
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
  - ☐ the international application as originally filed/furnished
  
  - ☐ the description:
    - pages \_\_\_\_\_ as originally filed/furnished
    - pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
    - pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
  
  - ☐ the claims:
    - pages \_\_\_\_\_ as originally filed/furnished
    - pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19
    - pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
    - pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
  
  - ☐ the drawings:
    - pages \_\_\_\_\_ as originally filed/furnished
    - pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
    - pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
  
  - ☐ the sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.
  
3. ☐ The amendments have resulted in the cancellation of:
  - ☐ the description, pages \_\_\_\_\_
  - ☐ the claims, Nos. \_\_\_\_\_
  - ☐ the drawings, sheets \_\_\_\_\_
  - ☐ the sequence listing (*specify*): \_\_\_\_\_
  - ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_
  
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
  - ☐ the description, pages \_\_\_\_\_
  - ☐ the claims, Nos. \_\_\_\_\_
  - ☐ the drawings, sheets \_\_\_\_\_
  - ☐ the sequence listing (*specify*): \_\_\_\_\_
  - ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded".

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/KR2004/000576

## Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims	1-12	YES
	Claims	None	NO
Inventive step (IS)	Claims	1-12	YES
	Claims	None	NO
Industrial applicability (IA)	Claims	1-12	YES
	Claims	None	NO

### 2. Citations and explanations (Rule 70.7)

Reference is made to the following document:

D1: KR 2003-94150 A (equivalent to KR 425907 B1)

The present invention relates to a fine filtering apparatus comprising:

a main body, filter media, a supplied water jacket, a filter media fixing plate, a density control plate having a doughnut shape, an inner porous chamber extending from the top of the main body and a concentrated filtrate discharge jacket.

D1 discloses a fine filtering apparatus comprising:

a main body, a water/air inlet pipe, a filter media fixing plate, a filtered water discharge jacket and a concentrated filtrate discharge jacket.

D1 does not provide the supplied water jacket, the density control plate and the inner porous chamber of the present invention.

In the light of D1, there is no reasonable basis to believe that the skilled one in the art could arrive at the subject matter of the present claims without exercising inventive skill.

Therefore, the subject matter of claims 1-12 is considered to be novel, involve an inventive step and be industrially applicable under PCT Article 33(2)-(4).

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/KR2004/000576

**Box No. VII Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).



From the INTERNATIONAL BUREAU

**PCT**

SECOND AND SUPPLEMENTARY NOTICE  
INFORMING THE APPLICANT OF THE  
COMMUNICATION OF THE INTERNATIONAL  
APPLICATION (TO DESIGNATED OFFICES  
WHICH APPLY THE 30 MONTH TIME  
LIMIT UNDER ARTICLE 22(1))

(PCT Rule 47.1(c))

To:

Y.P. LEE, MOCK & PARTNERS  
The Cheonghwa Bldg.  
1571-18 Seocho-dong  
Seocho-gu  
Seoul 137-874  
RÉPUBLIQUE DE CORÉE

Date of mailing (day/month/year)  
13 July 2006 (13.07.2006)

Applicant's or agent's file reference  
NA-21657-PCT

IMPORTANT NOTICE

International application No.  
PCT/KR2004/000576

International filing date (day/month/year)  
17 March 2004 (17.03.2004)

Priority date (day/month/year)  
08 March 2004 (08.03.2004)

Applicant

NANOENTECH CO. LTD. et al

- ATTENTION:** For any designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002 (30 months from the priority date), **does not apply**, please see Form PCT/IB/308(First Notice) issued previously.
- Notice is hereby given that the following designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002, **does apply**, has/have requested that the communication of the international application, as provided for in Article 20, be effected under Rule 93bis.1. The International Bureau has effected that communication on the date indicated below:  
15 September 2005 (15.09.2005)

AU, AZ, BY, CN, CO, DZ, EP, HU, KG, KP, MD, MK, MZ, NA, PG, RU, SY, TM, US

In accordance with Rule 47.1(c-bis)(i), those Offices will accept the present notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

- The following designated Offices, for which the time limit under Article 22(1), as in force from 1 April 2002, **does apply**, have not requested, as at the time of mailing of the present notice, that the communication of the international application be effected under Rule 93bis.1:

AE, AG, AL, AM, AP, AT, BA, BB, BG, BR, BW, BZ, CA, CR, CU, CZ, DE, DK, DM, EA, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, ID, IL, IN, IS, JP, KE, KZ, LC, LK, LR, LS, LT, LV, MA, MG, MN, MW, MX, NI, NO, NZ, OA, OM, PH, PL, PT, RO, SC, SD, SG, SK, SL, TJ, TN, TR, TT, UA, UZ, VC, VN, YU, ZA, ZW

In accordance with Rule 47.1(c-bis)(ii), those Offices accept the present notice as conclusive evidence that the Contracting State for which that Office acts as a designated Office does not require the furnishing, under Article 22, by the applicant of a copy of the international application.

#### 4. TIME LIMITS for entry into the national phase

For the designated or elected Office(s) listed above, the applicable time limit for entering the national phase will, **subject to what is said in the following paragraph**, be **30 MONTHS** from the priority date.

In practice, **time limits other than the 30-month time limit** will continue to apply, for various periods of time, in respect of certain of the designated or elected Office(s) listed above. For regular updates on the **applicable time limits** (30 or 31 months, or other time limit), Office by Office, refer to the *PCT Gazette*, the *PCT Newsletter* and the *PCT Applicant's Guide*, Volume II, National Chapters, all available from WIPO's Internet site, at <http://www.wipo.int/pct/en/index.html>.

It is the applicant's sole responsibility to monitor all these time limits.

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Authorized officer

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